

What is claimed is:

- 171 9.26
- 5 1. A method for tracking multiple objects in a video sequence comprising:
selecting an initial configuration comprising a plurality of objects;
predicting a current configuration; and
computing a likelihood for the current configuration.
- 10 2. The method of claim 1 wherein said predicting step comprises
performing an object level prediction.
- 10 3. The method of claim 1 wherein said predicting step comprises performing
a configuration level prediction.
- 15 4. The method of claim 3 wherein said configuration level prediction
handles object addition and deletion from a current configuration.
- 20 5. The method of claim 1 wherein the predicting step comprises:
determining a percentage of the objects that are covered by the
current configuration;
determining a number of current configurations that correspond to
the objects; and
maximizing said percentage and minimizing said number to identify
an optimal current configuration.
- 25 6. The method of claim 5 wherein said percentage determining step
comprises solving:

$$\gamma = \frac{|A \cap (\bigcup_{i=1}^m B_i) + b|}{|A| + b}$$

- 30 7. The method of claim 5 wherein said percentage determining step
comprises solving:

$\xi =$

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10 configuration and individual object states; and

10. The method of claim 1 wherein said object configuration represents a
15 plurality of objects within a scene.

12. The method of claim 11 wherein said predicting step comprises
25 performing an object level prediction.

30 14. The method of claim 13 wherein said configuration level prediction
handles object addition and deletion from a current configuration.

15. The method of claim 11 wherein the predicting step comprises:
determining a percentage of the objects that are covered by the
current configuration;
determining a number of current configurations that correspond to
the objects;
maximizing said percentage and minimizing said number to identify
an optimal current configuration.

16. The method of claim 11 wherein said percentage determining step
comprises solving:

$$\gamma = \frac{|A \cap (\bigcup_{i=1}^m B_i) + b|}{|A| + b}$$

17. The method of claim 15 wherein said percentage determining step
comprises solving:

$$\xi = \frac{|A \cap (\bigcup_{i=1}^m B_i) + c|}{(|\bigcup_{i=1}^m B_i| + a)}$$

18. The method of claim 11 wherein multiple objects in a video sequence are
represented by said configuration comprising a plurality of modeled objects.